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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,671	10/12/2001	Toshiyuki Miyabashi	U 013667-3	1087

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EXAMINER	
SHOSHO, CALLIE E	
ART UNIT	PAPER NUMBER
1714	

DATE MAILED: 11/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/976,671	MIYABASHI ET AL.	
	Examiner	Art Unit	
	Callie E. Shosho	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-16,18-20,22 and 25-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-16,18-20,22 and 25-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. All outstanding rejections except for those described below are overcome by applicants' amendment filed 8/24/05.

The new grounds of rejection as set forth below are necessitated by applicants' amendment and thus, the following action is final.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 8-16, 18-20, 22, 26-31, and 33-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Ota et al. (U.S. 2002/0075369).

The rejection is adequately set forth in paragraph 6 of the office action mailed 2/22/05 and is incorporated here by reference.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 8-9, 15-16, 18-20, 22, 25-31, and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman et al. (U.S. 2002/0065347) in view of Kubota et al. (U.S. 6,039,796), Ohta et al. (U.S. 5,954,866), and *Aldrich Catalog*.

Freeman et al. disclose ink jet ink comprising water, solvent, 3-8% pigment including self-dispersible pigment, 1-30% humectant such as glycerol, penetrant such as 1,2-hexanediol, and 0.1-10% film-forming binder which is a polymer emulsion produced by process which comprises the steps of mixing water, monomer, emulsifier, and initiator together to allow emulsion polymerization to proceed to form polymer emulsion followed by adjusting the pH to alkaline, for instance, 8.5, using potassium hydroxide. There is also disclosed a method wherein the ink is printed using ink jet printer onto substrate (paragraphs 16-17, 19-21, 26, 28-30, 32-33, and 61-62).

Although there is no explicit disclosure of the reactivity of the polymer with divalent metal salt as required in present claim 33, it is understood (see page 10, line 19-page 11, line 7 of the present specification) that the reactivity is determined by both the fine polymer particle diameter and the amount of carboxyl groups on the surface of the particle. It is noted that Freeman et al. disclose polymer emulsions that naturally contain high amounts of carboxyl groups on the surface, i.e. obtained from acid component, and have a diameter of 250-400 nm. Since Freeman et al. clearly meets both criteria for reactivity as disclosed above, it is expected that the reference fine polymer particle will intrinsically exhibit reactivity similar to that claimed.

The difference between Freeman et al. and the present claimed invention is the requirement in the claims of (a) solid wetting agent, (b) pH adjustor, and (c) specific type of penetrant.

With respect to difference (a), Kubota et al., which is drawn to ink jet ink, disclose the use of wetting agent such as 1,2,6-hexanetriol and trimethylolpropane (col.5, lines 43-47 and 51-52) . Given that Kubota et al. disclose wetting agent identical to that presently claimed, it is clear

that such wetting agents would intrinsically be solid at room temperature. Evidence to support this position is found on page 2387 of the *Aldrich Catalog* that discloses that trimethylolpropane has melting temperature of 56 to 58 ^{0}C and thus, it would have been natural for one of ordinary skill in the art to infer that trimethylolpropane is in fact solid at room temperature. It is noted that Kubota et al. also disclose the use of saccharide in order to improve color, minimize feathering, and minimize uneven printing (col.6, lines 15-42).

In light of the motivation for using solid wetting agent disclosed by Kubota et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such wetting agent in the ink jet ink of Freeman et al. in order to produce ink with increased wettability, and improved color that will not clog the printer nozzles and not exhibit feathering, and thereby arrive at the claimed invention.

With respect to difference (b), Ohta et al., which is drawn to ink jet ink, disclose the use of pH adjustor such as sodium hydroxide, lithium hydroxide, or potassium hydroxide in order to improve the dispersion stability of the pigment and resin emulsion (col.9, lines 26-31).

In light of the motivation for using pH adjustor disclosed by Ohta et al. as describe above, it therefore would have been obvious to one of ordinary skill in the art to use such pH adjustor in the ink jet ink of Freeman et al. in order to produce ink with good stability, and thereby arrive at the claimed invention.

With respect to difference (c), Kubota et al., which is drawn to ink jet ink, disclose the use of glycol ether penetrant (col.5, line 66-col.6, line 7) in order to increase penetration of ink into substrate.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use glycol ether penetrant in the ink jet ink of Freeman et al., and thereby arrive at the claimed invention.

6. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman et al. in view of Kubota et al., Ohta et al., and *Aldrich Catalog* as applied to claims 8-9, 15-16, 18-20, 22, 25-31, and 33-35 above, and further in view of either Belmont et al. (U.S. 5,630,868) or Suzuki et al. (U.S. 6,153,001).

The rejection is adequately set forth in paragraph 9 of the office action mailed 2/22/05 and is incorporated here by reference.

7. Claims 8-9, 15, 19-20, 22, and 25-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganapathiappan et al. (U.S. 2003/0060562) in view of Kubota et al. (U.S. 6,039,796), Ohta et al. (U.S. 5,954,866), McCain et al. (U.S. 5,981,623), and *Aldrich Catalog*.

Ganapathiappan discloses ink jet ink comprising water, solvent in amount of, for instance, 10%, 0.1-15% pigment, penetrant, wetting agent, and 1-5% polymer emulsion comprising fine particles of polymer wherein the polymer emulsion is produced by process which comprises the steps of mixing water, monomer, emulsifier, and initiator together to allow emulsion polymerization to proceed to form polymer emulsion followed by adjusting the pH greater than 7 using potassium hydroxide. It is disclosed that the polymer is produced from monomers including 0.1-5% crosslinking monomer and 1-60% hydrophilic monomers

comprising acidic functional groups. There is also disclosed a method wherein the ink is printed using ink jet printer onto substrate (paragraphs 10, 14, 23-24, 33, 62-63, 65, 78, 81, 87, and 89).

Although there is no explicit disclosure of the reactivity of the polymer with divalent metal salt as required in present claim 33, it is understood (see page 10, line 19-page 11, line 7 of the present specification) that the reactivity is determined by both the fine polymer particle diameter and the amount of carboxyl groups on the surface of the particle. It is noted that Ganapathiappan discloses polymer emulsions that naturally contain high amounts of carboxyl groups on the surface, i.e. obtained from hydrophilic monomers comprising acidic functional groups, and have average diameter of 5-500 nm. Since Ganapathiappan clearly meets both criteria for reactivity as disclosed above, it is expected that the reference fine polymer particle will intrinsically exhibit reactivity similar to that claimed.

The difference between Ganapathiappan and the present claimed invention is the requirement in the claims of (a) solid wetting agent, (b) penetrant, (c) pH adjustor, and (d) specific type of wetting agent.

With respect to difference (a), Kubota et al., which is drawn to ink jet ink, disclose the use of wetting agent such as 1,2,6-hexanetriol and trimethylolpropane (col.5, lines 43-47 and 51-52). Given that Kubota et al. disclose wetting agent identical to that presently claimed, it is clear that such wetting agents would intrinsically be solid at room temperature. Evidence to support this position is found on page 2387 of the *Aldrich Catalog* that discloses that trimethylolpropane has melting temperature of 56 to 58 ^{0}C and thus, it would have been natural for one of ordinary skill in the art to infer that trimethylolpropane is in fact solid at room temperature. It is noted that

Kubota et al. also disclose the use of saccharide in order to improve color, minimize feathering, and minimize uneven printing (col.6, lines 15-42).

With respect to difference (b), McCain et al., which is drawn to ink jet ink, disclose the use of 1,2-hexanediol or 1,2-pentanediol in order to improve penetration of the ink into the substrate and eliminate intercolor bleed (col.4, lines 56-67).

In light of the motivation for using solid wetting agent disclosed by Kubota et al. as described above and for using specific penetrating agent disclosed by McCain et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such solid wetting agent and penetrant in the ink jet ink of Ganapathiappan in order to produce ink with increased wettability, improved penetration into substrate, and no intercolor bleed that will not clog the printer nozzles and not exhibit feathering, and thereby arrive at the claimed invention.

With respect to difference (c), Ohta et al., which is drawn to ink jet ink, disclose the use of pH adjustor such as sodium hydroxide, lithium hydroxide, or potassium hydroxide in order to improve the dispersion stability of the pigment and resin emulsion (col.9, lines 26-31).

In light of the motivation for using pH adjustor disclosed by Ohta et al. as describe above, it therefore would have been obvious to one of ordinary skill in the art to use such pH adjustor in the ink jet ink of Ganapathiappan in order to produce ink with good stability, and thereby arrive at the claimed invention.

With respect to difference (d), Ohta et al., which is drawn to ink jet inks, disclose the use of glycerol in order to prevent clogging of the printer nozzles and improve the moisture retention and storage stability of the ink (col.8, lines 36-39 and 44).

In light of the motivation for using glycerol disclosed by Ohta et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use glycerol in the ink of Ganapathiappan et al. in order to produce ink with good storage stability and moisture retention that will not clog the printer nozzles, and thereby arrive at the claimed invention.

8. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganapathiappan in view of Kubota et al., Ohta et al., McCain et al., and *Aldrich Catalog* as applied to claims 8-9, 15, 19-20, 22, and 25-35 above, and further in view of either Belmont et al. (U.S. 5,630,868) or Suzuki et al. (U.S. 6,153,001).

The difference between Ganapathiappan in view of Kubota et al., Ohta et al., McCain et al, and *Aldrich Catalog* and the present claimed invention is the requirement in the claims of specific type of pigment.

Belmont et al. disclose the use of modified carbon black containing hydrophilic group on its surface wherein the hydrophilic group includes sulfonic acid, sulfinic acid, carboxylic acid and their salts. The motivation for using such pigment is that it has improved water dispersability as compared to untreated carbon black and produces ink with good stability, jettability, print quality, and optical density (col.4, lines 15-21, 29-35, and 44-46, col.5, lines 46-47, col.5, line 63-col.6, line 6, and col.6, lines 41-56).

Alternatively, Suzuki et al. disclose self-dispersing pigment containing hydrophilic group on its surface wherein the hydrophilic group includes sulfonic acid and carboxylic acid and their salts. The motivation for using such pigment is that no dispersant is required to stably disperse the pigment in the ink (col.7, lines 5-62).

In light of the motivation for using specific type of pigment disclosed by either Belmont et al. or Suzuki et al., it therefore would have been obvious to one of ordinary skill in the art to use such pigment in the ink of Ganapathiappan in order to produce ink which has good stability, jettability, print quality, and optical density, or alternatively, to produce ink which does not require dispersant, and thereby arrive at the claimed invention.

Response to Arguments

9. Applicants' arguments filed 8/24/05 have been fully considered but they are not persuasive.

Specifically, applicants argue that Ohta et al. is not a proper reference against the present claims under 35 USC 102 given that although Ohta et al. disclose the use of wetting agent, the list of possible wetting agents disclosed by Ohta et al. is vast.

However, although Ohta et al. discloses the use of other types of wetting agents, applicant's attention is drawn to MPEP 2131.02 (A) which states that "..when the species is clearly named, the species claim is anticipated no matter how many other species are additionally named". *Ex Parte A*, 17 USPQ2d 1716 (Bd. Pat. App. & Inter. 1990).

Applicants further argue that there is no explicit disclosure in Ohta et al. of ink as presently claimed.

However, "applicant must look to the whole reference for what it teaches. Applicant cannot merely rely on the examples and argue that the reference did not teach others", *In re Courtright*, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967). A fair reading of the reference as a whole discloses ink comprising self-dispersing pigment, resin emulsion, wetting agent that is

1,2,6,-hexanetriol, penetrant including 1,2-hexanediol, and thus, it is the examiner's position that Ohta et al. is a proper anticipatory reference against the present claims.

Applicants also argue that Kubota et al. is not a relevant reference against the present claims given that Kubota et al. do not disclose using wetting agent in combination with penetrating agent and polymer emulsion as required in the present claims.

However, note that while Kubota et al. do not disclose all the features of the present claimed invention, Kubota et al. is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, and in combination with the primary reference, discloses the presently claimed invention.

Applicants also argue that with respect to the 35 USC 103 rejections of record that given that one must pick and choose the claimed penetrating agent and wetting agent, the examiner has not established a *prima facie* case of obviousness.

However, it is noted that Freeman et al. disclose ink jet ink comprising water, solvent, pigment, humectant, penetrant such as 1,2-hexanediol, and polymer emulsion. It is noted that Freeman et al. disclose that the preferred penetrant include 1,2-alkyl diols and explicitly recites 1,2-hexanediol as presently claimed. However, there is no disclosure in freeman et al. of solid wetting agent which is why Freeman et al. is used in combination with Kubota et al.

Kubota et al., which is drawn to ink jet inks, disclose the use of solid wetting agent, i.e. 1,2,6-hexanetriol and trimethylolpropane. Although 1,2,6-hexanetriol and trimethylolpropane are but two of the wetting agents disclosed by Kubota et al., it would have been obvious to one of ordinary skill in the art to chose wetting agent, absent evidence to the contrary, including ,2,6-hexanetriol and trimethylolpropane as presently claimed.

Thus, given that Freeman et al. disclose that preferred penetrant includes 1,2-hexanediol and given that Kubota et al., which is drawn to ink jet inks as is Freeman et al., explicitly disclose the use of wetting agent identical to that presently claimed as well as provides motivation for combining the references, it is the examiner's position that the combination of Freeman et al. with Kubota et al. is proper.

Similarly, with respect to Ganapathiappan et al., it is noted that Ganapathiappan et al. disclose ink comprising penetrant and wetting agent, however, there is no disclosure of specific wetting agent or penetrating agent as now required in the present claims. This is why Ganapathiappan et al. is now also used in combination, in addition to Kubota et al. which teaches the use of solid wetting agents, with McCain et al. which discloses the use of 1,2-hexanediol or 1,2-pentanediol.

Thus, given that Ganapathiappan et al. disclose the use of ink comprising combination of wetting agent and penetrating agent, given that McCain et al. and Kubota et al. disclose the use of specific penetrating agent and wetting agent, respectively, as presently claimed, and given that McCain et al. and Kubota et al. each provide motivation for combining the references, it is the examiner's position that the combination of Ganapathiappan et al. with McCain et al. and Kubota et al. is proper.

NOTE: On page 9 of the amendment filed 8/24/05, applicants state that a 1.132 declaration would be provided, however, it is noted that such declaration has not been filed. If applicants were to submit such declaration and if such declaration provides proper side-by-side comparison that is commensurate in scope with the scope of the present claims, the examiner would be willing to reconsider the 35 USC 103 rejections of record.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
11/12/05